

Code: 9A02502

B.Tech III Year I Semester (R09) Supplementary Examinations June 2017

**TRANSMISSION OF ELECTRIC POWER**

(Electrical and Electronics Engineering)

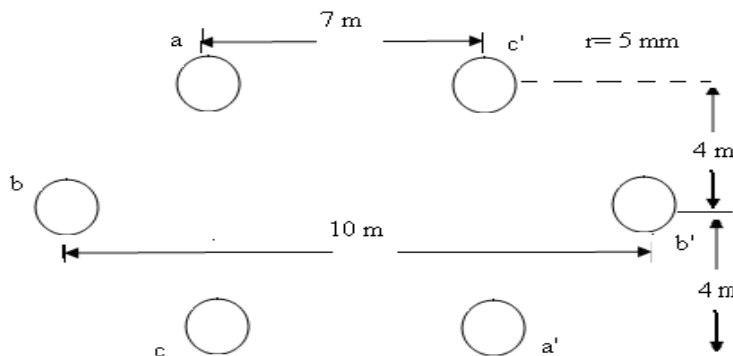
Time: 3 hours

Max. Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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- 1 Determine the Inductance, capacitance and charging current per km of a double circuit 3- $\phi$ , 50 Hz, 220 kV transmission line as shown in the figure below. The radius of each conductor is 5 mm.



- 2 (a) Derive the expression for A, B, C, D parameters of nominal- $\pi$  medium length transmission line.  
(b) Input to a Single-phase short length line is 2000 kW at 0.8 lagging p.f. The line has a series impedance of  $(0.4+j0.4)$  ohms. If the load voltage is 3 KV, find the load and receiving end power factor. Also find the supply voltage.
- 3 Starting from the fundamentals, determine the equivalent- $\pi$  network parameters of a long transmission line. And also prove  $AD-BC = 1$  for the same network.
- 4 (a) What is the significance of Bewley lattice diagrams?  
(b) A 200 kV,  $3\mu s$ , rectangular surge travels on a line of surge impedance of 400 ohms. The line is terminated in a capacitance of 3000pF. Find an expression for voltage across the capacitance.
- 5 Write short notes on:  
(a) Phenomenon of corona.  
(b) Factors which affect the corona.  
(c) Methods to reduce corona.
- 6 Write short notes on:  
(a) Static shielding.  
(b) Pin type insulator.
- 7 (a) What is Sag-Template? What is its use?  
(b) An overhead line has a span of 260 m. The weight of the line conductor is 0.68 kg per meter run. Calculate the maximum sag in the line. The maximum allowable tension in the line is 1550 kg.

- 8 What is the necessity of grading of cables? Explain briefly the various grading methods of cables.